

REMARKS

This Amendment is submitted in response to the Office Action mailed June 2, 2009. With this Amendment, claims 1, 20 and 29 are amended. The currently pending claims before the Examiner for consideration are claims 1, 5, 6, 9, 12-14, 17-20, 22-24 and 29.

On page 2, the Office Action responds to Applicant's arguments, stating that "Applicant's argue that the model of the final part is broken time-wise into a first portion and a second portion. However, it should be noted that such breaking time-wise is not present in the claimed limitations." Accordingly, each of independent claims 1, 20 and 29 is hereby amended to recite "temporal" first and second portions or first and second phones. The term "temporal" means "of or pertaining to time." *Random House Dictionary* (2009). This feature is fully supported by the original specification, published at US 2005/0159954, at paragraphs [0049-0058], for example.

On page 3, the Office Action notes that "the features upon which applicant relies (i.e., "an unchanging, constant, discrete categorical level of pitch") are not recited in the rejected claim(s)." Accordingly, each of independent claims 1, 20 and 29 is hereby amended to recite "discrete categorical levels." The term "discrete" means "1. apart or detached from others; separate; distinct: *six discrete parts*; 2. consisting of or characterized by distinct or individual parts; discontinuous." *Random House Dictionary* (2009). This feature is fully supported by the original specification, published at US 2005/0159954, at paragraphs [0050] (assigning levels H, M, L) and [0058] (assigning levels 1, 2, 3, 4, 5], for example.

Applicant does not believe that these amendments are necessary because of the term "level" (By definition, a "level" is an extent, measure or degree. *Random House Dictionary* (2009). A changing value cannot be considered to be associated with "a level.") already connotes an unchanging, constant, discrete value, these amendments are made to expedite prosecution.

On page 3 of the Office Action, claims 1, 6, 9, 12, 14, 17, and 29 were rejected under 35 USC § 103(a) as being unpatentable over Chen, U.S. Patent No. 5,751,905 in view of Huang et al., "Whistler: A Trainable Text-To-Speech System," 1996. Independent claims 1 and 29 have been amended to more particularly recite that the claimed system models syllables having an initial part and a final part, wherein the final part comprises a first temporal portion/phone corresponding to a first relative pitch and a second portion/phone corresponding to a second relative pitch, wherein the different levels of pitch comprise at least two discrete categorical levels, and wherein each portion/phone has a categorical level associated with it.

All references to the pending application will refer to the published version at U.S. Patent Publication No. 2005/0159954. As illustrated in FIG. 5 of the pending application and discussed in ¶ [0054], Mandarin Chinese, an exemplary tonal language, includes five different tones, four of which are illustrated in FIG. 5. The fifth tone is a neutralization mode of the other four. As the Office Action points out, Chen teaches that a pitch contour varies with time. This can also be seen in Applicant's FIG. 5.

As shown in FIG. 5, a pitch contour is a curve or line representing the variance of pitch over time. Chen's "high" tone corresponds with Applicant's "tone 1" of FIG. 5;

Chen's "rising" tone corresponds with Applicant's "tone 2." Chen's "low" tone corresponds with Applicant's "tone 3." Chen's "falling" tone corresponds with Applicant's "tone 4." Chen's "untuned" version corresponds with Applicant's "tone 5," not shown in FIG. 5 but discussed as a neutralization mode of the other tones. However, these teachings of Chen do not render obvious the claimed invention, wherein a model of the final part of a syllable is broken up time-wise into a first portion and a second portion, and wherein a discrete categorical level of pitch is assigned to each of the temporal portions.

The discussion in Applicant's ¶ [0050] illustrates an advantage of the claimed invention. For example, ¶ [0050] discusses that tone 2 can be modeled as low-high (LH) or medium-high (MH), for example. Thus, a model wherein the final part of each syllable is assigned a categorical level of pitch associated with each of two temporal portions allows more ways to describe tone 2 than the single "rising" toneme of Chen.

Referring again to Applicant's FIG. 5, Chen teaches that a pitch contour describes the pitch, which is a measurable quantity and varies with respect to time. Four of the five pitch contours recognized in Mandarin Chinese are illustrated in FIG. 5 as tones 1 through 4. Each of these contours is a continuous line or curve. There is no suggestion in Chen or the prior art to break up a final part of a syllable into different time-wise portions, and assign to each of those portions a discrete categorical level of pitch, as claimed. Even if one were to decompose a pitch contour into different temporal portions, for most of these tones, the pitch would be changing within each of these portions, as described by the slope or tangent of the line or

curve. Thus, even within a small span in time, the pitch is constantly changing. It is only the applicant's disclosure that teaches representing this constantly changing pitch by a proxy that is an unchanging, constant, discrete categorical level value. Accordingly, the association of a discrete categorical level associated with each of these temporal portions is taught by the present application and would not have been suggested by the prior art. Thus, Chen does not teach a system where a syllable is modeled having a final part comprising first and second temporal portions, wherein each portion has a discrete categorical pitch level associated with it, as claimed in independent claims 1 and 29. Huang does not add any disclosure that remedies this deficiency in Chen. Accordingly, the Applicant respectfully submits that independent claims 1 and 29 are not rendered obvious by the combination of Chen and Huang.

Further, as to claims 6, 14 and 33, the Office Action at the bottom of page 3 states that "Chen has 5 tones (e.g. different tones) and 5 pitch contours (different pitch contours) and they contain five categorical levels (high, rising, falling), where the association is implied by pitch contour." The Applicant respectfully submits that the claimed discrete categorical levels are not analogous to Chen's five tone types. As described in ¶[0058] of the present application, using five discrete categorical levels (here represented by the integrals 1, 2, 3, 4 and 5) with the five Mandarin Chinese tones, single falling tone 4 could be represented by several different configurations of level representations, for example, "5-1, 5-2 or 4-1," for example. Thus, the five discrete categorical levels (1, 2, 3, 4, 5) are clearly distinguishable from the five tone types (high, rising, low, falling, untuned) of Chen.

It is not reasonable to read the one types of Chen as meeting the claimed "level" limitations. As discussed before, by definition, a "level" is an extent, measure or degree. *Random House Dictionary* (2009). A changing value (e.g., rising, falling) cannot be considered to be associated with "a level." Moreover, even Chen's high, low, and untuned types have changing pitch contours and cannot be considered to be at "a level." (See Chen Fig. 3).

Additionally, even if the five tones of Chen were read to meet the limitation of the five categorical levels, it would not satisfy the feature of the first and second temporal portions of the final part of the syllable each having a categorical level associated with it. That is because each of the tone types of Chen describes the tone for the entire syllable. (Chen, column 4, lines 8-13).

In view of the foregoing remarks, the Applicant respectfully submits that independent claims 1 and 29 are not rendered obvious by the combination of Chen and Huang. Dependent claims 6, 9, 12, 14 and 17 include the limitations of independent claim 1. Thus, for at least the reasons set forth above, the dependent claims are also not rendered obvious by the combination of Chen and Huang. Accordingly, the Applicant respectfully requests withdrawal of the rejection of claims 1, 6, 9, 12, 14, 17 and 29 under 35 USC § 103(a).

On page 7 of the Office Action, claims 5 and 13 were rejected under 35 USC § 103(a) as being unpatentable over Chen in view of Huang, and further in view of Akinlabi et al., "Tonal Phonology of Yoruba Clitics." Claims 5 and 13 depend from independent claim 1, discussed with respect to the combination of Chen and Huang above. The Applicant respectfully submits that Akinlabi does not add any

disclosure that, in combination with Chen and Huang, renders obvious each element of independent claim 1, discussed above. Accordingly, the Applicant respectfully requests withdrawal of the rejection of claims 5 and 13 under 35 USC § 103(a).

On page 8 of the Office Action, claims 18 and 19 were rejected under 35 USC § 103(a) as being unpatentable over Chen in view of Huang and further in view of Chen 2, "Recognize Tone Languages Using Pitch Information on the Main Vowel of Each Syllable." Claims 18 and 19 each depend from independent claim 1, discussed with respect to the combination of Chen and Huang. Chen 2 does not add any disclosure that, in combination with Chen and Huang, renders obvious each element of independent claim 1, discussed above. Accordingly, the Applicant respectfully requests withdrawal of the rejection of claims 18 and 19 under 35 USC § 103(a).

On page 9 of the Office Action, claims 20, 21, 23 and 24 were rejected under 35 USC § 103(a) as being unpatentable over Chen in view of Huang. Independent claim 20 recites a system wherein the final parts of a syllable are modeled comprising "a temporal first phone corresponding to a first relative pitch and a second temporal phone corresponding to a second relative pitch; and wherein the different levels of pitch comprise at least two categorical discrete levels, and wherein each phone has a categorical level associated with it." This feature has been discussed above with respect to independent claims 1 and 29 and the Chen and Huang references. Accordingly, the same arguments presented above with respect to independent claims 1 and 29 are applicable here to independent claim 20. In view thereof, the Applicant respectfully submits that independent claim 20 is not rendered obvious by the combination of Chen and Huang. Dependent claims 21, 23 and 24 include the

limitations of independent claim 20. Accordingly, for at least the reasons cited above, the Applicant respectfully submits that these claims are also not rendered obvious by the prior art. Thus, the Applicant respectfully requests withdrawal of the rejection of claims 20, 21, 23 and 24 under 35 USC § 103(a).

On page 12 of the Office Action, claim 22 was rejected under 35 USC § 103(a) as being unpatentable over Chen in view of Huang and further in view of Akinlabi. Independent claim 20 has been discussed with reference to Chen and Huang above. Akinlabi does not add any disclosure that, in combination with Chen and Huang, renders obvious each feature of independent claim 20. Accordingly, the Applicant respectfully submits dependent claim 22 is not rendered obvious by the prior art. Thus, the Applicant respectfully requests the withdrawal of the rejection of claim 22 under 35 USC § 103(a).

The foregoing remarks are intended to assist the Office in examining the application and in the course of explanation may employ shortened or more specific or variant descriptions of some of the claim language. Such descriptions are not intended to limit the scope of the claims; the actual claim language should be considered in each case. Furthermore, the remarks are not to be considered exhaustive of the facets of the invention which are rendered patentable, being only examples of certain advantageous features and differences, which applicant's attorney chooses to mention at this time. For the foregoing reasons, applicant reserves the right to submit additional evidence showing the distinction between applicant's invention to be unobvious in view of the prior art.

Furthermore, in commenting on the references and in order to facilitate a better understanding of the differences that are expressed in the claims, certain details of distinction between the same and the present invention have been mentioned, even though such differences do not appear in all of the claims. It is not intended by mentioning any such unclaimed distinctions to create any implied limitations in the claims.

The Director is authorized to charge any fee deficiency required by this paper or credit any overpayment to Deposit Account No. 23-1123.

Respectfully submitted,

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